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The Success Prediction of the Technological Start –up Projects in Slovak Conditions

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Abstract

The paper deals with conditions for the formation of technology start-up projects in the Slovak Republic. It summarizes current and upcoming legislative conditions for entrepreneurship and compares the conditions of start- ups developing in the EU and the USA, also their support within H2020 and in SR within the RIS III, as well. On the real examples of subjects AeroMobile and e-Sense are treated economical and technical problems/options of integrated in the market SR/EU currently. Paper is comparing the development in SR since the period of the first start-up in Slovakia (company OPEN NT) to the present. The paper is processing sectors in which support for start-ups is suitable for the Slovak economy. As shown, the development in the world IT start-ups projects are focused strictly on sales 'strong player' in to the market, while start-up in other industrial areas are facing locally. For instance of start-ups with venture capital in the world are designed for subsequent resale to foreign investors, the question of purpose these projects supported by the resources of Slovakia. Measurement the success of startup s activities is a topic that has been received certain attention during the last years. The objective is to investigate and clarify how to evaluate and revise measurement systems. Generally, were used several materials and literature to research and measure efficiency for data envelopment analysis. Research of technology start-up companies uses a literature and public resources is the base of analyzing knowledge in the past. The data are the result of the survey for start – ups in different ways for different places. The paper sets and justifies the appropriateness of using state support for startups selected industries in the SR

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1. Introduction

The business environment in Slovakia is created mainly by small and medium enterprises, which represent 99.9% of all companies. Small and medium-sized enterprises ("SMEs") are provided in the corporate economy employment opportunities for nearly 75% of the active workforce and contribute to over 50% of the gross production and added value creation.† From the all of 563 501 active small and medium-sized enterprises registered at the end of year 2013 in the register of organizations Statistical Office of the Slovak Republic was established of new 41 274 "SMEs". Entrepreneurs prevailing from those 85% and businesses almost 11% while the total number of SMEs increased by 747 entities. SMEs in the Slovak Republic constitute 1.8% of the total number of SMEs in the European Union. Their value added of the total value added of SMEs in the EU constitutes 0.6% and 1.2%, also create jobs in all EU. From this perspective, the efficiency of Slovak SMEs compared to the EU is low. In addition, SMEs in Slovakia are characterized by low levels of spending on research and development as well as the low level of productivity. For that reason prevails in the Slovak economy technology imports. Critical is also the factor in maintaining the new company on the market. The Slovak Republic has a long recorded a high percentage of enterprise deaths in 2010. According to Eurostat represented the survival rate of businesses after three years since the establishment of only 41.7%), which ranks Slovakia to the penultimate place in the EU.

Nearby 85% of Slovak startups is in the initial stages of their development - 41% is in the phase following the creation of prototype and 50% generate income, but 83% are less than 100,000 Euros. The main sources of funding startups are formed primarily from personal savings – almost 74% and support of friends and family (22%). 57% of companies considering relocation to another country of which 80% due to new markets / customers, 48% because of access to funding and 32% due to the tax and legal environment. Also number of employees in startups in Slovakia is still low. Nevertheless, 78% of Slovak startups have created jobs (28% have 4-9 employees, 22% have 10 and more employees, 22% have no employees, 19% have 2-3 employees and 9% have one employee).

Paper focuses on estimating the relative importance of a variety approaches and variables in explaining pre-start-up success. A significant portion of those attempting to establish a business fails. People considering starting a business have an interest in knowledge about factors that contribute to success or failure in the pre-start-up. The key of sustainable economic growth and competitiveness is to increase productivity based on innovation, which are widely supported by the start-up activities. Start-up is business initiatives with high growth and innovation potential that can start a long-term support for smart and inclusive growth and also attract foreign investment. It contributes to the development of industries with high added value, regional and global competitiveness and employment creation skilled workforce.

2. Material and Methods

Start-up companies in Europe are different than in USA. Financial sources of risk capital are limited. The growth of investment in start-ups is necessary and expected depends on the variety approaches and variables in explaining pre-start-up success. Start-up is business initiatives with high growth potential that can start a long-term support for smart and inclusive growth and also attract foreign investment.

The term "startup" refers the newly emerging technological company, project or also phase of the new business plan. Startup´s project can occurs in any field. However, primarily start-ups are usually associated with information technology. Despite of the fact that is currently says a lot of about the specific need for technological advances or rise Slovakian start-ups system is rather limited.

Startups are generally defined as beginning with companies that seek to apply innovative approaches to solving problems and have high potential for scalability. Their added value is a breakthrough or substantially improved product or service for the relevant market. Despite the fact that similar definitions also appear in specialist publications, selected for the purpose of providing publicly supported measures it will be necessary to define the criteria in the Slovak conditions have not yet been clearly established.

The basic prerequisite to measure a support of startups are therefore the identification of the categories of persons that will qualify for the selected provided incentives. The target groups should be conducted in accordance with a transparent assessment of the applicant on the basis of clearly defined criteria of definition. Basic parameters will need to determine the most accurate and most rational way to avoid exclusion, to be supported and misuse of the measures envisaged by unauthorized entities.

The methodology consists of the following iterative few steps: business understanding, data understanding, data preparation and evaluation and deployment. Measurement the success of startup s activities is a topic that has been received certain attention during the last years. Generally, were used several materials and literature to research and measure efficiency for data envelopment analysis. This paper is focused on the success prediction of the technological start –up projects in Slovak conditions. The objective is to investigate and clarify how to evaluate and revise measurement systems. Research of technology start-up companies uses a literature and public resources is the base of analyzing knowledge in the past. The data are the result of the survey of start – ups in different ways for different places.

3. Results

Start-up companies are founded in a fast changing and fuzzy environment and their owners make significant efforts to create innovative products and services and to improve the business processes which are often costly and time-consuming. To create a start-up requires a huge upfront investment in many aspects: from initial research and development to dedicated resources, new models, processes and also equipment. Future returns of these investments are always uncertain and unsafe. More start-up companies are now projecting towards innovative business models as an alternative or a complement to a product or services innovation. Start-ups companies have also the social impact of creating job opportunities and stimulating the world economic growth. The efficiency of the new venture creation process can be improved by increasing the returns and minimizing the risks with the help of a model for predicting the success of start-up companies.

3.1. Start-ups in EU and USA

3.1.1 EU

Start-ups firms depend on entrepreneurs - the individuals who have the ideas and are willing to take the risks necessary to get a firm off the ground. Europe needs more entrepreneurs and the Commission is looking at ways in which potential entrepreneurs may be encouraged to set up firms.

Enterpreneurship 2020Action Plan

Europe lags behind its competitors in entrepreneurial attitudes and SMEs are the biggest source of new jobs and related growth. A European Entrepreneurship Action Plan is needed to address areas where entrepreneurial potential can be unleashed and where key bottlenecks can be overcome and obstacles to entrepreneurial activities removed. The Entrepreneurship Action Plan is a blueprint for decisive action to unleash Europe's entrepreneurial potential, to remove existing obstacles and to revolutionize the culture of entrepreneurship in Europe. Investments in changing the public perception of entrepreneurs, in entrepreneurship education and to support groups that are underrepresented among entrepreneurs are indispensable if we want to create enduring change.

The Entrepreneurship 2020 Action Plan is based on three main pillars:

1. Entrepreneurial education and training
2. Creation of an environment where entrepreneurs can flourish and grow, and
3. Developing role models and reaching out to specific groups whose entrepreneurial potential is not being tapped to its fullest extent or who are not reached by traditional outreach for business support.

Access to appropriate sources of finance constitutes one of the most significant constraints on growth and entrepreneurship in Europe. Market deficiencies lead to a lack of financial support for European firms with growth potential and entrepreneurship in general. This necessitates public actions to overcome market deficiencies and to complement the limited amounts of private finance available.

3.2.1. USA

In the world of business, the word "startup" goes beyond a company just getting off the ground. Startups have some unique struggles, especially in regard to financing. That's because investors are looking for the highest potential return on investment, while balancing the associated risks.

Startups are engines of job creation, and entrepreneurs intent on growing their businesses create the majority of new jobs in the United States, in every part of the country and across every industry. Both the Federal government and the private sector can help dramatically increase the prevalence and success of entrepreneurs across the country.

American Start-up system is based on reducing barriers. One critical goal of Startup America is to reduce barriers in order to fully unleash America's entrepreneurial spirit and create more 21st -century jobs. After hearing firsthand from over 1,000 entrepreneurs, investors, and other participants across the entrepreneurial ecosystem in eight communities, this report summarizes the ideas that SBA gathered.

The "what" focuses on the areas of critical importance to entrepreneurs – money, people, ideas, and customers. In each of these areas, the government plays an important role in setting the ground rules of how markets function, as well as implementing direct programs to overcome market failures. Furthermore, entrepreneurs consistently emphasized the importance of "how" government functions, citing the need for less complexity, faster timelines, and a more customer-centered mindset. Five key areas emerged:

1. People: identifying, hiring, retaining, and developing a strong entrepreneurial workforce in America
2. Money: fostering an environment in which promising U.S. startups and high-growth firms can access the kinds of capital they need
4. Ideas: transforming more of America's discoveries and breakthroughs into commercial success • Customers: ensuring that America's small firms can compete for customers, including U.S. Government contracts and export business
5. "Lean" Government: making the U.S. Government itself more customer-centric and nimble in serving our own entrepreneurs and high-growth firms.

4. Discussion

Support for innovation and innovative projects are implemented at multiple Slovak Ministries (MF SR, MH SR, MŠVVaŠ SR) and agencies (SBA Slovak for Innovation and Energy Agency - SIEA, Centre for Scientific and Technical Information - CVTI). Individual institutions are not in view of the support startup ecosystem is currently coordinated. The present concept proposes the coordination and synergy between the main actors.

4.1. Start-up support in Slovakia

The current state of startup scene in Slovakia is characterized by:

- Poor range of financial and non-financial instruments,
- Insufficient interconnection startup community colleges and scientific institutions
- Low level of cooperation between the individual members of Slovak startup ecosystem
- Inadequate entrepreneurial skills, poor motivation and low overall interest in entrepreneurship as a career choice.
- Disproportionate regulatory burden on business (unnecessary barriers).

4.2. RIS III

Europe is facing major economic challenges that require an ambitious economic policy for the 21st century. The EU has set out its vision for Europe's social market economy in the Europe 2020 strategy which aims at confronting our structural weaknesses through progress in three mutually reinforcing priorities: smart growth, based on knowledge and innovation; sustainable growth, promoting a more resource efficient, greener and competitive economy; inclusive growth, fostering a high employment economy delivering economic, social and territorial cohesion. Investing more in research, innovation and entrepreneurship is at the heart of Europe 2020 and a crucial

part of Europe's response to the economic crisis. So is having a strategic and integrated approach to innovation that maximizes European, national and regional research and innovation potential.

Part of the Europe 2020 strategy, the Commission adopted the 'Innovation Union'4 flagship initiative. It sets out a comprehensive innovation strategy to enhance Europe's capacity to deliver smart, sustainable and inclusive growth and highlights the concept of smart specialization as a way to achieve these goals. The 'Digital Agenda for Europe'5 flagship initiative is also part of Europe 2020 and aims to deliver sustainable economic growth and social benefits from Information and Communication Technologies (ICT). The Digital Agenda for Europe initiative is therefore relevant to all regions and cities, as it focuses on a key element for the design of smart specialization strategies. The concept of smart specialization has also been promoted by the Communication 'Regional Policy contributing to smart growth in Europe 2020'.6 In this document the Commission encourages the design of national/regional research and innovation strategies for smart specialization as a means to deliver a more targeted Structural Fund support and a strategic and integrated approach to harness the potential for smart growth and the knowledge economy in all regions.

National/regional research and innovation strategies for smart specialization (RIS3) are integrated, place-based economic transformation agendas that do five important things:

1. They focus policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development, including ICT-related measures;
2. They build on each country's/region's strengths, competitive advantages and potential for excellence;
3. They support technological as well as practice-based innovation and aim to stimulate private sector investment;
4. They get stakeholders fully involved and encourage innovation and experimentation;
5. They are evidence-based and include sound monitoring and evaluation systems.

The RIS3 approach is relevant to all three priorities of Europe 2020 i.e. smart, sustainable and inclusive growth. RIS3 is a tool for the permanent serious internal learning process and a tool for the improvement of the system and mechanisms in the whole 2014 – 2020 programming period. The reason of this procession evolutional model is a desire to have an effective, economical and efficient implementation of investments in R&I in the SR with the objective of ensuring the contribution towards fulfilling Europe 2020 Strategy. In this context and also based on EC regulation it is necessary to elaborate in chronological intervals the thematic action plans. Two-year horizon of action plan's operation is suggested, while in line with the monitoring system annual follow-up evaluation will be realized, including the update of the document or action plans. One of the key conditions for fulfilling RIS3 intentions for Slovakia is a concentration of all resources of the Slovak Republic (human, material, non-material, financial) in time and space in such a way that by the year 2020 all objectives will be fulfilled. One of the important conditions for implementing the new system of management is effective monitoring, which will provide information about individual activities, identify and map the process of individual activities. It will also provide information about the advancement of partial objectives not only from the perspective of drawing financial sources, but also the eventual effect on Slovak economy.

4.3. Specific technological start-ups of Slovakia

The tech sector is one of the fastest-growing and most exciting industries. When the startup economy booms, like it did in 1999 and like it is again in 2014, many people suddenly discover they want to "be an entrepreneur." Historically first technological startup in Slovakia was project OPEN NT Company focused in electronic devices for communication and cable TV systems. Investments from joint venture funds help to established high-tech company. OPEN NT project had finished after 8 years with big technological success.

Most well-known Slovakian startup is project AEROMOBIL. From timeline point of view, this is not new project. Flying car is technologically developed in Slovakia for about 20 years, but now is going into commercial application ready to market. Core customers are worldwide managers especially from Western Europe and USA.

Last interesting technological startup is eSense Company. The team of young engineers has been crated during theirs university activity in first Central and Eastern European formula student electric team STUBA Green Team in

STU Bratislava. Their core focus is mechatronics - mechanical engineering application with electrical intelligence. This project is supported only from private sources by cofounders of company.

5. Conclusion

The critical period for most of these projects is a period of 2-3 years, when the company has to overcome the risks of arrival on the global market and finance resources are beginning to decrease. The start-up conversion process to stable and financially independent company is a method through a central element of the management of the company.

About 50% of new businesses fail during their first five years, the so-called 'valley of death' of business development. To achieve the increased economic growth rates targeted by Europe 2020 it is vital to increase the resilience and competitiveness of these firms. Dedicated information, professional services and technical advice support are fundamental tools for this goal. Existing programs in Europe and the US prove that advice and mentoring by experienced entrepreneurs improves resilience, increases internationalization, leads to greater growth and more newly founded enterprises. IT and the Internet are the single most important sources of growth for national economies around the world. European SMEs grow two to three times faster when they embrace digital technologies. Therefore, European entrepreneurs should be equipped with the knowledge, skills, hardware and software needed to capture the opportunities brought about by this Market, especially to be able to function exclusively or predominantly as web-entrepreneurs if they choose this mode of operation. The first question in this section of the consultation was on increasing and improving targeted business support services which half of the respondents rated as very impactful and important. Also the following question on dedicated support for SMEs to benefit from digital entrepreneurship showed a similar result with 44% of all respondents considering it very impactful, 36% important and only 14% not very important. However, support for SMEs to go green showed a more even spread with 20% considering it not very important and two thirds estimating it important and very important.

Startups ecosystem SR is started to evolve in the years 2010 - 2011 through a partial initiatives of the private sector. The public sector is the topic of support startups has been involved since 2013, through implementation of the project National entrepreneurial centers (hereinafter "NPC") the creation of national support schemes startups and programming OP Val which provides long-term sustainable solutions in the context of the key initiatives of the European Commission aimed at promoting entrepreneurship (such as the Entrepreneurship Action Plan 2020 SBA, etc.).

Startup´s support for SR consists of monitoring three strategic goals (see fig. 1):

1. Creating suitable conditions for business, for instance the regulatory environment without unnecessary obstacles to the formation and action of startups in the market.
2. Creating and providing support services for strengthening startup´s ecosystem that is creating infrastructure and support services for those interested in entrepreneurship, startup teams and established startups.
3. Financing, mainly - "Death Valley" phase of business initiatives (the "valley of death" where most startups fails)

Death Valley is directly related to the initial phase of business when a start-up found itself still only at the stage of development of innovative product, service or prototype, but without achieving profit. In overcoming this phase is fundamentally instant in so-called. "Break Even Point" where sales cover the full cost of the company, and thus do not generate any profits yet, but at the same time avoiding the further losses.

Above all the proposed measures are intended to serve to support startups in the Slovak Republic with a graphic representation of each measure in the corresponding part of the life cycle of a startup:

An essential prerequisite for the implementation of support measures for start-ups it is necessary to define a target group of subjects prepared for action - namely the definition of start-up and selection process. Another essential prerequisite is equally comprehensive concept agendas support start-ups.

As a part of the proposal measure to support start-ups in Slovakia is required for creating the appropriate conditions for business such as sufficient legal framework for companies, for the proper functioning of start-ups tax policy which limits the liquidity of the start-ups and likewise also staying foreign innovative entities in Slovakia.

For creating and providing support services for strengthening the ecosystem of start-ups is required to obtain sufficient competence of candidates for entrepreneurship, startup teams and a comprehensive support system. Moreover, it is essential activity angel investors and the motivation to undergo an initial risk of entrepreneurship in developing ideas before founding legal entity. It needed the motivation of universities, educational centers and

research and development organizations to implement supporting activity for start start-up and likewise also provide sufficient capacity for institutional transfer knowledge into practice.

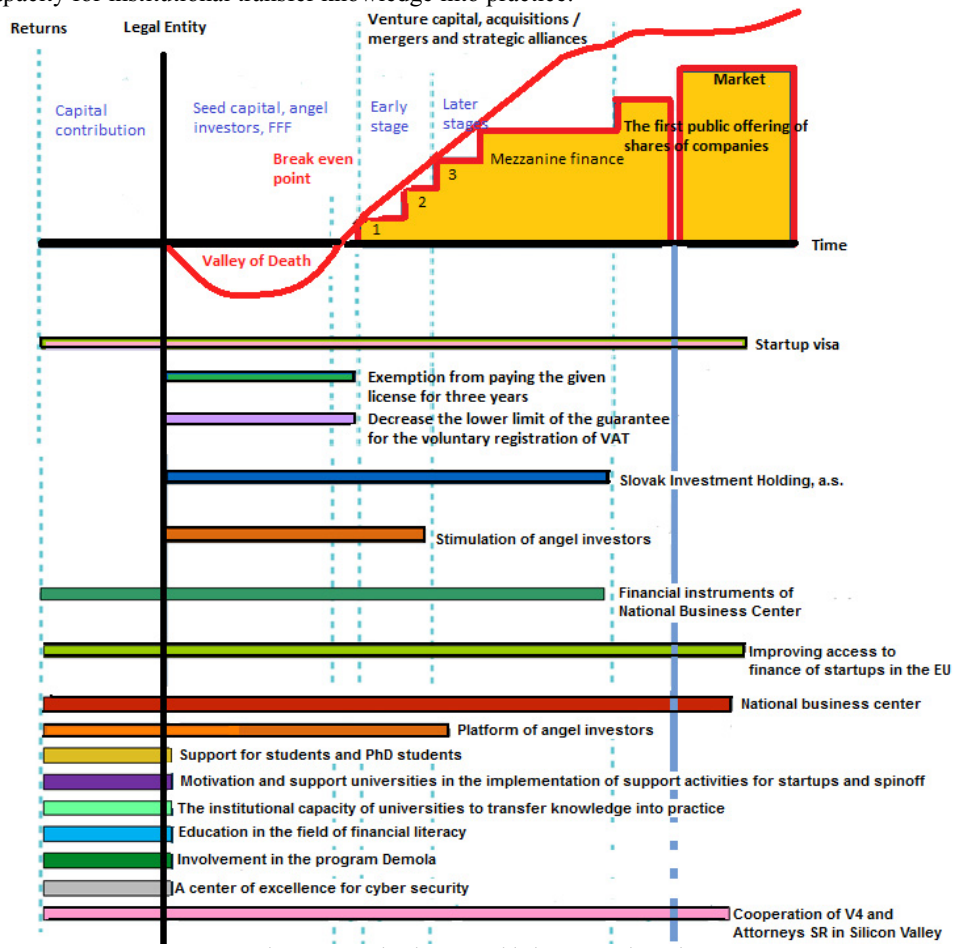

Fig. 1Start-up development with three strategic goals.

One of the preconditions successes supports of startups and most substantially the financing phase enterprise initiatives. Motivation individual investors, and access to capital funding in earlier but also the growth phase start-ups possible solution would be a problem with an effective and efficient allocation of capital switched startups with investors arising from international barriers and limited access to financing possibilities.

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